



THE RARA RAG

Newsletter of The Rochester Amateur Radio Association, Inc.
Founded in 1931

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SHOW US YOUR SHACK ONLINE MEETING AND PRESENTATION

SCOTT THEIS, W2LW, RAARA VICE PRESIDENT

There is no picnic this year because of COVID. And unfortunately, no banquet, at least at the Burgundy Basin. So we are having a July electronic General Meeting with the idea of members showing their shacks.

From the minimal "shack in a box" to the uber shack, we want to hear about it.

Give us a tour. It does not have to be formal; you get to be the presenter for that slot. You can show live video and/or stills with some slides. Guidelines:

- 3-5 minutes (more if warranted, let me know)
- How did you get started? What types of radio have you had?
- Talk about your setup (the bands and modes you work, what you like, how long it took to get where you are today, etc.)

Feel free to discuss whatever you feel is important in creating a shack, and keep in mind that members may want to ask questions!

Please email vicepresident@rochesterham.org if you are interested in participating. Given the normal available time for the presentation segment, it will probably work out to 10-15 available presentation slots. I know a lot of folks would love to hear what others have as a setup! So, think about sharing!

The meeting will start 7:00 PM EDT. To register, go to the following link (a separate link will be provided to presenters):
<https://attendee.gotowebinar.com/register/7174580960197717775>

Bring snacks and *show us your shacks* and enjoy the meeting at home — Join us online Wednesday, July 1st, 2020 at 7:00PM. Please arrive a little early to make sure you are completely set up.

AGAIN — DO NOT COME TO THE BSA/SWC — YOU WILL BE ALONE!!

K2JD

N2EH

W2EOC



Courtesy Florida AM Group



BOARDZ BUZZ

DAVID ENRIGHT, K3WHD



One thing I have heard over the years is "I meant to do it." What am I talking about, is the time to keep your computer safe and getting in the habit of backing up your system. Over the past few years, computers have become a bigger part of our lives and Ham radio. More folks are doing digital modes (in this time of poor band conditions), general/contesting logging computer based programs, and keeping records of different settings they may be using for their rig.

By doing the few things I am about to tell you up front can save you hours of frustration and pain. Nothing worse than saying "I meant to do that", when your computer crashes or you lose all of your stuff. Taking your computer to a repair shop for repair can cost you hundreds of dollars, along with the loss of your info.

These programs are all **FREE**, but you can upgrade for more features:

1. Download/Install "REVO uninstaller" and use instead of windows Uninstaller ~ This is a pc based computer program that does a great job of removing programs a lot better than windows does and it keeps your system running faster and not getting bogged down.
2. Download/Install "AVG or AVAST" ~ These are free antivirus programs that will keep your system safe. Yes, viruses are on the decline, but you still need an antivirus program to keep the old viruses out.
3. Download/Install "Malwarebytes" & "SuperAnti Spyware" ~ I suggest using both, because one program can't do it all. One program goes wide and the other goes deep. What I mean by this, with using both, it will do a better job of finding all the malware and spyware that is hiding on your computer. Spyware & Malware are on the rise to get into your computer and steal your information. Just logging into the internet, as you do most days to check your email can invite spyware in. The thieves make money if they can steal your info or even your email address book.

Just a simple thing of having spyware on your computer and stealing your email address book, seems not harmful to you, right? Wrong, they take all the email address books that they have stolen from millions of folks and sell them to spammers for money. Now you have to put up with all that junk mail filling your mailbox and have to delete it. A good web page to learn how to do all this is <https://securitytango.com/>. Nick has put this site together and we tell folks every week on our show to DANCE the TANGO!! (Soundbytes.org)

The next thing is back-up, back-up and more back-up. Having three different places to back-up your important files, photos, and other documents isn't a bad idea. You have to remember, a computer is a device THAT WILL FAIL...!! Most likely at a time when you need it the most. Don't worry about backing up the programs, as they normally need to be reinstalled if the system crashes. It's the info

and photos that you won't get off a dead hard drive or may cost a lot to retrieve from a service. A flash drive, portable USB hard drive and on-line cloud storage are the way to go. Google DOCs and Photos are Free to use. I use both and it doesn't cost me a cent.

If you have any other questions email me denright1228@gmail.com

Editor's NOTE:

Thanks David for being very early with your submission of the Boardz Buzz article. If there were an award for being early - you would WIN!

THANK YOU,
Forest

As a result of the continuing COVID19 concern, most of our "in-person" RARA events have been canceled in the near term. These include the monthly meetings at the BSA, our Hamfest on June 6, Tour de Cure on June 13. RARA Banquet and our RARA picnic on July 11. Our next planned gathering will be our open house to be held as part of the International Lighthouse Lightship Weekend on July 22. Building on the success of our online monthly meetings and RARA Academies, the board has chosen to continue to hold the monthly online meetings on Wednesday, June 3, and Wednesday, July 1. Look for details of these meeting to appear at rochesterham.org

CALENDAR OF EVENTS

WEDNESDAY JULY 1, 2020 - RARA General Meeting

7:00 PM - ON LINE

<https://attendee.gotowebinar.com/register/7174580960197717775>

TBD JULY, 2020 - RARA Board of Directors Meeting

6:30PM ON LINE

Email request for link to secretary@rochesterham.org

WEEKEND AUGUST 22, 23, 2020 INTERNATIONAL LIGHTHOUSE LIGHTSHIP WEEKEND



EDUCATION

TIM BROWN, WB2PAY, EDUCATION COORDINATOR

RARA LICENSE COURSES

Home study is the norm for a while. License classes may resume in the fall.

RARA offers tutoring for those doing home study and needing assistance understanding a topic.

Arrange for tutoring by emailing
education@rochesterham.org

NOTICE - VE Testing

Batavia Hamfest July 18th.

<https://w2so.org/batavia-hamfest/>

VE Exam 8:00 AM

To Pre register for test –
contact John Maxwell

maxwell@acsu.buffalo.edu

or Call 716-404-9256

Joe Merolillo, K2ZX, organizer of the ROC City Hamfest on August 29th, has requested RARA to provide VE Testing at the hamfest. Details will be on the RARA website as we get closer to the date.

We expect RARA VE testing will resume in September.

RARA ACADEMY WORKSHOPS

Academy Recordings are available at
https://www.rochesterham.org/rara_academy.htm

Fall 2020 Antenna Analyzers

- SWR measurements
- Smith Charts
- Coax Loss
- Cable Impedance
- Coax Length & Velocity Factor
- Measure Capacitance & Inductance

Date and Location TBD

Presenters: Larry Brightenfield, W2LB and Pete Schuch, WB2UAQ

Find up to date Academy information at
https://www.rochesterham.org/rara_academy.htm

NEW CLUB STATION TRUSTEE

The RARA Board of Directors is pleased to announce that Dave Enright, K3WHD, has accepted the position of Club Station Trustee.

RARA presently holds three callsigns:

N2EH Ed Holdsworth Memorial Station — for Club Station and General Use
K2JD RARA Club Station — for Contests, Awards, Demonstrations, Talk-In, Special Events
W2EOC Emergency Operation — for Public Service Events

Special thanks for all the years of service provided by Jim DiTucci, N2IXD who held the position previously and also serviced as RARA President from 2007 to 2008.

PUBLIC SERVICE REPORT

MIKE MOORE, KC2NM, PUBLIC SERVICE COORDINATOR

Due to the limitations posed by the COVID-19 shutdown, the date for the postponed 2020 Rochester Tour de Cure has come and gone. The kickoff and planning for the October 3 virtual Tour de Cure is now underway. While we will not be providing the communications support for the routes as we have in past years, we can support the tour as riders for the October 3 virtual event. For more information about the virtual event plans see <https://www.facebook.com/tdcrochester/>. The 2021 Tour de Cure will be held on June 12, 2021.

Our next RARA public service event will be **Bike MS: ROC the Ride 2020**. See the MS Society website as plans develop. The specific routes are being planned now but the event will be based out of Genesee Valley Park. There is a form to sign up to be a part of the RARA communications support team at the [Public Service page of the RaRa website](#). We hope to see you at this event on Sept. 12.

Please mark your calendars for our upcoming RARA Public Service Events

Bike MS: ROC the Ride	Genesee Valley Park - Rochester, NY	Saturday	Sept. 12, 2020
Fairport Lift Bridge Regatta	Erie Canal – Fairport, NY	Saturday	Sept. 19, 2020
Pumpkin Patrol	Overpasses of the New York State Thruway	Friday & Saturday	Oct. 30-31, 2020
Holiday Science & Technology Days	Rochester Museum & Science Center	Monday - Wednesday	Dec. 28-30, 2020

AUGUST 22, 23 HAM RADIO OPEN HOUSE

Radio amateurs from the Rochester Amateur Radio Association (RARA) will hold an open house that runs concurrently with the 2020 International Lighthouse Lightship Weekend (ILLW). ILLW will feature a special event station to showcase the science and skill of Amateur Radio. This event is open to the public and the open house participants will explain and promote amateur radio by interpreting the special event operation as it is conducted.

RARA members will establish at least 2 temporary stations to showcase Amateur Radio's capabilities to the general public. For over 100 years, Amateur Radio — sometimes called ham radio — has allowed people from all walks of life to experiment with electronics and communications techniques, as well as provide a free public service to their communities during a disaster, all without a cell phone or the Internet. The ILLW station demonstrates ham radio's ability to work reliably under any conditions from almost any location and create an independent communications network. The goal of the ILLW station will be to contact other ILLW stations around the world as well as stations interested in the event.

We invite anybody to come see how ham radio works. The science and skill we offer can open doors to new career paths in technology and engineering fields, and an Amateur Radio network can function completely independent of other networks, such as the Internet or cellphone infrastructure. That's critical during a disaster or emergency, such as a hurricane or a 911 call center outage. And above it all, there's an entire social network of people connected through their enjoyment of radio, sharing projects and ideas, mentoring, and a sense of community and belonging.

Anyone may become a licensed Amateur Radio operator. There are over 740,000 licensed hams in the United States, as young as age 5 and as old as 100. Members of the public are encouraged to learn more about Amateur Radio by visiting www.arrl.org/what-is-ham-radio.

RARA members are invited to sign up to participate in the August 22, 23 Open House at <https://rochesterham.org/>

Related Links

<http://www.arrl.org>
<https://rochesterham.org/>

TEMPORARY RULE WAIVERS FOR ARRL FIELD DAY 2020



For Field Day 2020 only, Class D stations may work all other Field Day stations, including other Class D stations, for points.

In addition, for 2020 only, an aggregate club score will be published, which will be the sum of all individual entries indicating a specific club (similar to the aggregate score totals used in ARRL affiliated club competitions).

ARTICLE VIDEOS

Last month's Rag, June issue, included a companion video to Bill Hopkins article "Build It and They Will Come" on page 9.

In articles, this symbol will be the link to the videos. Click this symbol. 

I have received positive feedback about the idea and Bill's video.

It would be great if you provide a video with your article, if it is appropriate for your article: demonstrating a project, close up of a build technique, operating a new mode, etc.

Don't make 30 min videos. We don't want to steal great RARA Academy subjects. 5 or 10 minutes should be acceptable.

Please let me know if you will provide a video with your article so I can plan for it in the RAG.

For those who missed Bill's video, click this icon. 

LEARNING MORSE CODE A TALE OF 2 HAMS

TIM BROWN, WB2PAY AND FOREST SHICK, WA2MZG

In the fall of 1969 I (Forest) started college at the Indiana Institute of Technology in Ft Wayne, IN. I immediately fell in with the wrong group of engineers - members of the Kekionga Amateur Radio Club, W9BHR - the college ham club.

To make matters worse, I met a student who was able to copy CW in his head. I would enviously sit in the shack and watch him lean back in his chair, holding a QSO. No paper, no pencil, no keyer.

Kekiongan Amateur Radio Club

L to R: Ray A. Stoller, Bill Barr, Randy Harshman, Tim C. Brown (Treasurer), Raymond A. Tippin, David Barta (Secretary), and Forest Shick (President)



NOTE: The Tim Brown in the above photo is not WB2PAY!

He "forced" me, peer pressure, to get my license and so began the saga of learning Morse code.

I had my technician license by the spring of 1970.

I would sit for hours in the shack listening to code practice tapes. On a vintage code practice machine.



First I reached about 8WPM so I would pass the Technician Class code test at 5WPM. Next I reached 15 - 18WPM so I would pass my Advanced class code test at 13WPM

ALL - using this machine.



My goal was 21WPM - but I graduated and got a job!

No Farnsworth or Koch method - straight code - or at least as straight as someone could draw a black line on a white piece of paper tape.

Just a reminder - Novices and Technicians started out at 5WPM - not 10 or 15 or 18 but 5WPM.

They were able to get on the air and hold QSOs.

If you can do 5 or 4 or 6 WPM - get on the air - make your first QSO - don't be fooled into believing you have to be able to do 15 or 18 WPM. That comes with time, practice, Elmering and being on the air!

A good place to begin is 7.114MHz.

I had a very nice QSO with W1DV - at my pace - not his.

This is the recommended frequency by SKCC for beginners.

The hams that hang out there are willing to help - at your speed!

Forest's walk down memory lane made me recall my Morse beginnings in 1961 at Bishop Timon HS radio club, W2QZR.

Here is a photo from my HS yearbook. Can you pick me out of the photos?

The station was a Heathkit DX-40 transmitter with VF1 VFO and a Hallicrafters SX-111 receiver.



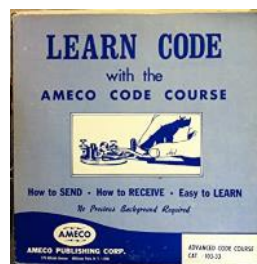
Seated, First Row: J. Bala, Treasurer; K. O'Neill. Second Row: K. Crane, J. Raiser, D. Bockstedt, Secretary. Standing: T. Brown, President; P. Antos, Vice-President.



We used an Instructograph Morse Code Trainer <https://www.youtube.com/watch?v=-7J44bDIIE4>

At home I used the Ame-co Code Course vinyl record. To increase my code speed, I would change the speed of the record player from 33 1/3 to 78 RPM.

I recently acquired a collection of 6 records by Victor Records for International Morse Code Lessons. Thanks to Ralph Dutcher, KD2BDZ for donating them.



I passed 5 WPM in early 1962 and got my Novice license. Later that year I got up to 13 WPM and passed my General.

Back in those days, I had to go into the city of Buffalo and take my General code and written exams at the FCC office.

It was terrifying to a teenager to sit in front of an FCC examiner and send code on a straight key.

We have come a long way from the days of paper tapes and vinyl records. One thing has not changed though, you have to put in the time and practice to get on the air. Once on the air, you will be surprised how your skills will improve.

The Elmers of RXCW Group are eager to help you individually and on nets. Take advantage of these opportunities.

My 40m QCX

KARL HEINZ KREMER, K5KHK

Before I talk about "my" QCX, let's review what it is and where it came from:

The QCX transceiver from QRP-Labs is (or more accurately "was", but more about that in a minute) in my opinion the best value proposition in ham radio: For under \$50 you got a single band CW transceiver with a built-in keyer, a built-in straight key, the tools to adjust it and a CW decoder. Throw in a pretty decent receiver with a narrow filter for CW reception, and you have the blueprint for success. If you want to learn more about the measurements the ARRL did in their lab for a QST article, you can find those details in the August 2019 issue of QST. A reprint of that article is available on the QRP-Labs web site: <https://www.qrp-labs.com/images/qcx/ARRLAug2019.pdf>

Hans Summers, the brains behind QRP-Labs, has sold almost 10,000 kits over just a few years: The original QCX kit was designed for the RSGB Youths On the Air summer camp buildathon in August of 2017. That's 10,000 kits in less than three years - a phenomenal success story. The hardware got updated with small modifications over the years but stayed basically the same. The software received a few more dramatic updates, and now even offers CAT control.

And, it comes with an excellent manual. If you follow the step by step instructions, you will most likely end up with a working radio.

If you have a QCX, you can find out the serial number of your kit on this web page: <https://www.qrp-labs.com/qcx/qcxserial.html> - make a label and stick it on the back of your rig. My 20m version that I built more than a year



ago is #5775 and my new 40m version is #8630.

One fun activity to participate in is the monthly QCX QSO party on (or around) the last Monday of every month. More details can be found here: <https://www.qrp-labs.com/qcx/party.html>

This is a good way to have QCX to QCX QSOs.

If you want to get in on the fun, but have not yet ordered your kit, then it's unfortunately too late. Hans announced recently that the QCX is history, and that he is not planning on making any more kits... However, this announcement came with some good news as well: Even though you can no longer get a QCX, you will be able to get a QCX+

So, what is the QCX+? It's the same radio, but in a different package: The original QCX has a very tightly packed PCB, and at times it gets a bit crowded if you want to fit a new part, a soldering iron, solder and maybe a finger or two to hold something in place between the already placed parts. It also did not make it easy to put it into a case. The new model fixes that by having a larger board, and actually comes with an optional case so that you end up with a nice-looking radio. More information about the QCX+ is available here: <https://www.qrp-labs.com/qcxp.html>

There are a couple of other interesting aspects of the new radio: There is an optional "Dev Board", which is 2nd PCB that fits on the first one and gives you access to all the important signals on the board, and you can experiment with and build your own hardware extensions. And, for those who think the digital VFO in the QCX drifts too much, there will be an optional TCXO, which can also be retrofitted into the original QCX.

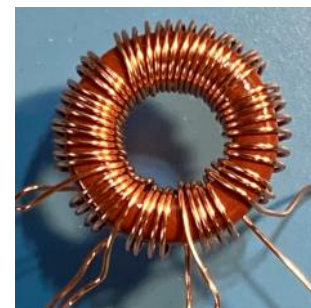
You can pre-order yours today, and it will ship probably in late June. The bad news is that it's no longer under \$50 - you now have to pay \$55 for it (that's just for the transceiver, once you add the case and other things, it gets a bit more expensive, but the radio with the enclosure is still cheaper than the original QCX with the custom case from BAMA in Germany - <https://www.bamatech.net/geraetegehaeuse/>).

So, let's talk about my QCX. When Forest approached me about the RXCWG build project, I still had an unbuilt QCX kit, which I bought last summer, after slapping myself for not picking one up at Dayton (Susan and I actually had breakfast with Hans at FDIIM one morning). So out of storage it came, and I reacquainted myself with the building instructions and did some research about different ways to build the project. There are two approaches: Stick to the manual and place all parts of the same type and value at the same time vs. building the project by subsystems and test each subsystem to make sure that you have not



introduced any errors. This makes it easier to fix anything that went wrong in the previous step. We did eventually decide to stick with the manual - almost 10,000 kits are a good reason to trust the excellent manual.

I started with the build, but stopped after placing the IC sockets and the first set of capacitors to add the toroids. My kit uses PCB version 4, the last version was 5, and in between the two, the instructions were changed so that the toroids are now the first elements that are being placed. I tried a compromise to come up with a way that allows somebody who has not soldered in a while to get some soldering practice on the IC sockets and about 10 of the capacitors before tackling the toroids, which require a bit more heat for the magnet wire coating to burn off. This worked out pretty well.



After placing all the other parts and a nervous first power-up (using a current limited power supply to keep any potential damage manageable), the next step was peaking the band pass filter and working on the wrong sideband suppression (or I/Q balance). This is all done with the built-in test tools and worked flawlessly. As the manual suggested, I went back and forth between I and Q adjustments a few times and ended up with a pretty good configuration. After connecting an antenna, it was obvious that the receiver was working perfectly. With a QRP power meter, I measured about 3.5W out with 13.8V power. That is a bit low, but still acceptable and more than enough to test the transit capabilities. After my first few QSOs I took off the display and spread the windings of the lowpass filter toroids a bit further apart. That brought the output power up to about 4W (and 5W with 15V input power).

My first QSO was an SKCC QSO - I tuned to 7,060Mhz and started to CQ. To make things a bit easier, I also spotted myself on the SKCC spotter (more about that in the future). It still took a few rounds of CQ to get somebody's attention, but eventually W8REA from Michigan came back, and I had my first QSO with my brand new QCX. The 2nd one was just a couple of minutes later when I answered a "CQ POTA" call, so not only did I get my 2nd QCX QSO, I also ended up getting credit for a park in my POTA stats.

Working a POTA station is fun, but even more fun is to actually activate a park with this little QRP radio. I went to



the newest NY park, the “Erie Canalway National Heritage Corridor”, which I had activated once before. To make sure that I could finish with a successful activation, I worked SSB with 100W from my Yaesu FT-857D first, and after 14 QSOs, I switched to the QCX. The antenna was just a hamstick on the car with two 33ft radials on the ground. Soon after my first CQ, I received a Reverse Beacon Network confirmation on my phone – that was a good sign that my signal was actually getting out. Five QSOs later, the QCX had proven that it is a capable radio and that even a full POTA activation with it would be possible - especially when adding a bigger antenna to the setup.

I’ve since added a few more QSOs with the QCX. In one instance, I had an almost painful experience... The QCX receiver does not have AGC (or automatic gain control), which means that in order to equalize the audio levels of weak and strong stations, you have to keep your hand on the volume control. When one of my CQs was answered by N4KHZ (Hi John!) from just one mile away, it almost blew out my ears. So be prepared to act fast and either turn down the volume or pull off your headphones.

If you have an unbuilt QCX kit sitting in your “someday shoebox”, take a couple of evenings and build it. And, if you have not yet considered building one of these radios, put your pre-order in for the new QCX+ - it’s still a great value.

ARE YOU A MEMBER OF RARA?

Tim Barrett K9VB, RARA Membership Secretary
membership@rochesterham.org

Currently our membership is over 500 members which is very encouraging. In fact, I recently reviewed a report from all ARRL affiliated clubs, and we are the 6th largest of the ARRL affiliated clubs. As two of the larger clubs draw their membership partly from national nets that they operate we are in the top 5 regional clubs. That is certainly something to be proud of!

Membership has several benefits:

- **Free** admission to our exclusive **Members Only Auction** in November.
- **Free** admission, food, and drink at our summer picnic and winter cabin party. – (when we can hold them!)
- **Free** amateur radio licensing courses.
- **Free** amateur radio license testing.
- Monthly newsletter: *The RARA Rag*
- **Free** classified advertising in the newsletter.
- Monthly meetings featuring an educational and entertaining presentation by a guest speaker.
- Monthly socials - a great opportunity to meet your friends and make new ones!
- Annual club banquet

- Members earn "points" that are redeemable towards a variety of rewards.
- Save \$15.00 when you join the ARRL.

We are always happy to enlist new members so if you are not yet a member, or your membership has lapsed, please consider joining or renewing. It is very easy to do, just go to [our new member page](#) to join or [our renewal page](#) to renew. Dues are only \$15 for full members or \$10 for Seniors and Associate members (who do not have their call sign yet). Associate members get a free upgrade to full membership when they get their ham license.

Our membership year runs to September 30th each year. However now is a great time to join because from July we are pro-rating all new memberships to expire September 30th, 2021, that’s 15 months for the price of 12! Members who joined mid-year are not left out, we assign them membership points to compensate for the ‘missing’ months which can be used towards next year’s membership (Note these only apply to new members, not renewals).

So, if you are not a member right now, don’t delay - go to our website and put that right!

RXCWG CW ACHIEVEMENT CHALLENGE

NAME	CALL SIGN	POINTS
Reiner	N2PEZ	44
Luke	K2DIT	17
Forest	WA2MZG	16
Karl Heinz	K5KHK	230
Todd	N2TMS	2
John	AC2RL	210
John	N2JSA	1
Dave	WA2HOY	17
Nick	KD2RHU	8

It is never too late to join in the fun and receive certificates acknowledging your efforts to improve Morse Code CW skills.

More information is available on our web page:
<https://www.rochesterham.org/rxcwg.htm>

FACE LIFT - PART 1

FOREST SHICK, WA2MZG

Are you ready to give your projects a face lift?

A 7,055.00
B 7,020.00

>>>>>>>>

A year or so ago, Karl Heinz, K5KHK introduced me to the Teensy. It is an Arduino type microcontroller board, but much more capable than the Arduino. In the May issue of the RAG, Don, AC2EV used a Teensy in his project.

I decided to take a look at the Teensy. I purchased a Teensy 3.2 and a Color Touch Screen Display from [PJRC](#).

The Arduino Integrated Development Environment (IDE) is used to program the Teensy. PJRC provides the instructions and additional software to make the IDE compatible with Teensy.

In this 2 part article, I will be discussing how to begin creating a GUI, Graphical User Interface, for a project and using the graphic display and touch screen features.

Once you have the IDE updated to include the Teensy, you have all the software necessary to experiment with the Color Touch Screen Display. Nothing else to download or install.

NOTE: There are videos included with this article to illustrate capabilities of these devices. Click the camera icon on the page.

Begin by starting the Arduino IDE.

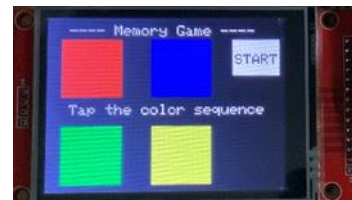
Select “**ILI9341Test**” program:

File / Examples / XPT2046_Touchscreen / ILI9341Test.

This program works without modification and demonstrates the coordinates returned from the touch screen controller. Compile and download the program to your Teensy.



Teensy 3.2



Color Touch Screen

Here are the 2 possible screens of the **ILI9341Test** program



Notice the coordinates of the stylus touching the screen. This indicates that the stylus is near the origin (0, 0) of the touch screen, bottom right corner.

Now try a program that is a bit more interesting.

Select **File / Examples / ILI9341_T3 / touchpaint**

The “**touchpaint**” program includes a header file that defines driver software for a different touch screen controller than is used on this display so you will have to change a few lines of code to include the proper header file.

Open the “**touchpaint**” program in the IDE.

Change:

```
#include <Adafruit_STMPE610.h>
```

To:

```
#include <XPT2046_Touchscreen.h>
```

Change:

```
// The STMPE610 uses hardware SPI on the shield, and #8  
#define STMPE_CS 8  
Adafruit_STMPE610 ts = Adafruit_STMPE610(STMPE_CS);
```

To:

```
#define XPT_CS 8  
XPT2046_Touchscreen ts = XPT2046_Touchscreen(XPT_CS);
```

The display and touch screen each have their own coordinate system and origin, (0, 0). Unfortunately, neither are the same.

The next addition aligns the axis of the display and the touch screen. This is indicated on the label of the package. Add the lines below to **void setup(void)** after the following statements:

```
tft.begin()
```

and

```
ts.begin()
```

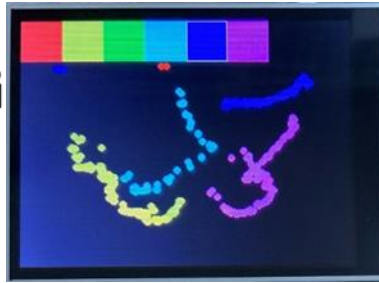
Add:

```
// origin = left, top landscape  
tft.setRotation(1);  
ts.setRotation(3);
```

When you compile and upload the program to the Teensy, you should see a blank screen with 6 colored blocks.

Using your finger, draw on the screen. Tap different colored blocks to draw different color lines.

This simple program demonstrates drawing boxes and fill with color. How to determine if the colored box has been touched, which colored box and finally drawing on the display.



GRAPHICS DISPLAY

We will discuss the display in this issue of the RAG. In the August issue, we will discuss the touch screen.

Here are a few display commands to become familiar with.

Most display commands depend on location, direction and color:

X = location on the X axis
Y = location on the Y axis
W = width or distance in the X direction
H = height or distance in the Y direction
C = color

With 0,0 in the upper left corner, the value of X increases moving from left to right and the value of Y increases from top to bottom. Characters, figures and drawings are all located / oriented by their upper left corner. Letters are drawn and treated as figures, not text.

`ILI9341_t3 tft = ILI9341_t3(CS, DC)` creates a display object, tft and defines the microcontroller pin to use as a chip select (CS) and as the data / command signal to the display controller (DC).

`tft.begin()` Initializes the display driver software

`tft.setRotation(R)` Sets the rotation or which corner of the display is 0,0. R can be a value from 0 to 3.

`tft.fillRect(C)` Set the screen background color.

`tft.drawRect(X, Y, W, H, C)` Draw the outline of a rectangle with a colored line of color C starting at point X, Y with a width of W and a height of H

`tft.fillRect(X, Y, W, H, C)` Draw a rectangle filled with color

`tft.setTextColor(C)` Set the color for displayed text

`tft.setTextSize(N)` Set the text size to N

The default characters are based on a 5 x 8 dot matrix. For a character size of N = 3, each dot is created with a 3x3 pixel block. For a character size of 2 each dot is created with a 2x2 pixel block. There is 1 block between each character. This allows you to calculate how much space text will occupy on the display. With N = 3 a character is 18 pixels wide and 24 pixels high. To display 10 characters you would need an area on the display that is 180 pixels long and 24 pixels high.

`tft.setCursor(X, Y)` Set the position to begin printing text

`tft.println("RaRa")` This prints the text, in the character size and colors specified, at the starting at the location X, Y.

The following is a simple program demonstrating the previous commands.

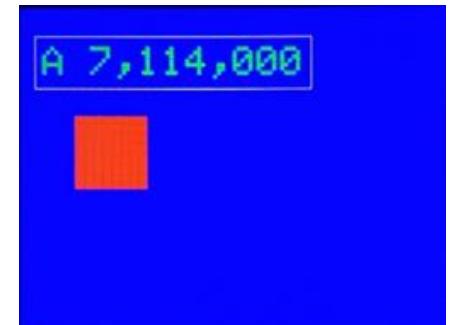
```
/*
 * Sample program for the GUI article
 */

#include <SPI.h>
#include <Wire.h>
#include <ILI9341_t3.h>

#define TFT_CS 10
#define TFT_DC 9
ILI9341_t3 tft = ILI9341_t3(TFT_CS, TFT_DC);

void setup()
{
  tft.begin(); // start the display
  tft.fillScreen(ILI9341_BLUE); // Black background
  tft.setRotation(1);
  tft.drawRect(10, 20, 210, 40, ILI9341_WHITE);
  tft.fillRect(40, 80, 55, 55, ILI9341_RED);
  tft.setTextColor(ILI9341_GREEN);
  tft.setTextSize(3);
  tft.setCursor(16, 28);
  tft.println("A 7,114,000");
}

void loop()
{
}
```



See the August 2020 RAG for a discussion of the touch screen and how to use it.

VE TEAM

RARA (Laurel VE affiliation) is not offering testing until at least September.

For remote testing please see hamstudy.org and search on the page for "remote" or "online"

ROC City net plans to offer testing at their hamfest

LARC (Lancaster Amateur Radio Club) is also offering testing.

Please continue to check either the RARA webpage or Laurel VE page at <https://www.laurelvec.com/index.php?team=RARA> for the latest information.

ALL TESTING SESSIONS CANCELLED

New licensees names are in BOLD

Don Kiser - AC2EV
RARA Board member
VE Team Leader
585-613-1035

CW ELMERS

Name	Call	Area	Email
Ned Asam	W2NED	Pittsford	w2ned@frontiernet.net
Tim Brown	WB2PAY	Ogden	tjbrown@rochester.rr.com
Pete Fournia	W2SKY	Penfield	pfournia@gmail.com
Bill Hopkins	AA2YV	Brighton	whopkin4@naz.edu
Bob Karz	K2OID	Webster	rkarz@rochester.rr.com
Joe Rowe	AG2Y	Webster	ag2y@rochester.rr.com
Harry Williams	KF2TV	Webster	harryw7872@gmail.com

RADIO ELMERS

Name	Call	Area	Email
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Bill Kasperkoski	WB2SXY	Pittsford	wb2sxy@gmail.com
Don Kiser	AC2EV	N Greece	dkiser100@gmail.com
Karl Heinz Kremer	K5KHK	Chili	k5khk@khk.net
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Peter Schuch	WB2UAQ	Perinton	pschuch@rochester.rr.com
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Dan Waterstraat	W2DEW	Henrietta	higreen@rochester.rr.com

RaRa CALENDAR

TIM BARRETT, K9VB, MEMBERSHIP SECRETARY

July 2020						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 RaRa Monthly Mtg ONLINE 7pm ROC City Net 3.810 MHz, 8pm CWOps Mini-CWT Test RAC Canada Day Contest\ CWOps Mini-CWT Test VHF-UHF FT8 Contest QRP Foxhunt	2 RaRa BoD 6:30pm ONLINE ARES Net 146.610 MHz, 7pm RTTYOPS Weekspint NRAU 10M Activity Contest SKCC Sprint Europe NCC Sprint	3 FISTS Summer Sprint	4 DL DX RTTY Contest Marconi HF Contest Original QRP Contest PODXS 070 40M Sprint YBDXC 80M Contest
5 DL DX RTTY Contest Marconi HF Contest Original QRP Contest PODXS 070 40M Sprint YBDXC 80M Contest	6 AWA Net 145.110 MHz, 7pm RSGB 80M CW Championship WW Sideband Activity Contest ARS Spartan Sprint	7 RXCWG CW Practice Net 8pm Phone Fray RTTYOPS Weekspint	8 ROC City Net 3.810 MHz, 8pm CWOps Mini-CWT Test QRP Foxhunt	9 ARES Net 146.610 MHz, 7pm RTTYOPS Weekspint NCC Sprint	10 FISTS Summer Sprint	11 IARU HF World Championship SKCC Sprint Marathon
12 IARU HF World Championship SKCC Sprint Marathon QRP ARCI Homebrew Sprint 4 States QRP Sprint	13 AWA Net 145.110 MHz, 7pm RSGB 80M SSB Championship WW Sideband Activity Contest	14 RXCWG CW Practice Net 8pm Phone Fray RTTYOPS Weekspint	15 ROC City Net 3.810 MHz, 8pm CWOps Mini-CWT Test QRP Foxhunt	16 ARES Net 146.610 MHz, 7pm RTTYOPS Weekspint NCC Sprint	17	18 Batavia Hamfest Russian Radio Championship CQ Worldwide VHF Contest Feld Hell Sprint NA QSO Party RTTY
19 CQ Worldwide VHF Contest NA QSO Party RTTY CQC Great Colorado Gold Rush	20 AWA Net 145.110 MHz, 7pm WW Sideband Activity Contest	21 RXCWG CW Practice Net 8pm Phone Fray RTTYOPS Weekspint	22 ROC City Net 3.810 MHz, 8pm CWOps Mini-CWT Test QRP Foxhunt	23 ARES Net 146.610 MHz, 7pm RTTYOPS Weekspint NCC Sprint	24	25 RSGB IOTA Contest
26 RSGB IOTA Contest ARS Flight of the Bumblebees	27 AWA Net 145.110 MHz, 7pm QCX Challenge RSGB FT4 Contest WW Sideband Activity Contest	28 RXCWG CW Practice Net 8pm Phone Fray RTTYOPS Weekspint	29 ROC City Net 3.810 MHz, 8pm CWOps Mini-CWT Test QRP Foxhunt	30 ARES Net 146.610 MHz, 7pm RTTYOPS Weekspint NCC Sprint	31	

NEWS FROM AREA CLUBS

MONROE COUNTY ARES / RACES NEWS

Monroe County Amateur Radio Emergency Service (ARES)® is an amateur radio public service organization based in Monroe County, New York, and is open to all licensed amateur radio operators. Monroe County Radio Amateur Civil Emergency Service (RACES) is a program of the Monroe County Office of Emergency Management. We participate in training and emergency exercises so that we can serve other agencies during times of communication failure.



The Monroe County Amateur Radio Emergency Service, Inc. holds its meetings on the fourth Thursday of each month except in July, August, November and December. Anyone interested, members and non-members, are welcome to attend.

On even numbered months the meetings are held at the Monroe County EOC, 1190 Scottsville Rd. (Media Room, 2nd floor, north end). On odd numbered months we meet at the Red Cross, 825 John St.. W Henrietta. at 6:00 PM. Please check our website for any schedule changes.

If the doors are locked, call WB2EOC on the 146.61 MHz (-) 110.9 Hz PL repeater.

Monroe County ARES/RACES meets on the air every Thursday of the month at 7:00 PM, on the N2MPE 146.61 MHz (-) 110.9 Hz PL and 444.45 (+) 110.9 Hz PL repeaters. Our club callsign is WB2EOC.

There is no net on nights when we hold our regular meeting, generally on the 4th Thursday of the month.

WEB: www.monroecountymcomm.org

Facebook : Monroe County Amateur Radio Emergency Service, Inc.

Twitter @MCARESny

Severe Weather Alerts: Winter may bring severe weather in the form of heavy snow storms, strong winds, and flooding. If you experience severe weather, especially when accompanied by damage to property in your area, listen to your local ARES/RACES repeaters for information. While official ARES/RACES activation could be a possibility, it is more important that we open a spontaneous net simply to share information about weather conditions in your immediate area. Don't wait for someone else to do it. Pick up the microphone and start a net. Have each check-in station give you a situational awareness report and emergency power report. If you don't have a copy of the directed net protocol, you can find one at the WEB address listed above. (Activities/ARES Net/ Net Script/

Downloads). We encourage all amateur radio operators to take a free Skywarn TM class offered by the National Weather Service. The schedule of classes can be found at <https://www.weather.gov/buf/skywarn>

Monroe County ARES
Ralph Dutcher, Net Control - KD2BDZ@arrl.net

ROCHESTER DX ASSOCIATION, RDXA

There will be no physical meeting at the EOC.

Information will be sent to RDXA members and other local clubs on a Zoom meeting, Tuesday 18 June at 7:30PM.



This meeting will discuss ways that members and other interested parties can participate in Field Day without the "normal" preparation we've been accustomed to. "Activity Hours" and other QSO generation ideas will be presented.

Check rdxa.com for details

ROCHESTER RADIO REPEATER ASSOCIATION

The Rochester Radio Repeater Association, RRRA invites you to attend its meetings. Meetings are held on the 3rd Friday of the month in the Pittsford Town Hall Basement starting at 7:30 PM.

There will be no meetings held during July and August, we will be on summer hiatus till September 18, 2020 when our regularly scheduled meetings will resume.

Stay tuned to our web site, www.k2rra.org We may still announce Amateur License testing in place of the August 2020 meeting.

The elected RRRA officers for 2019 - 2020 are, Bob Shewell, N2HJD, President, Bob ODell, N2BZX, Vice President, ED Wilkonski, KC2WM Secretary, and Bob Smith, NS2B-Treasurer / Membership Chairman. RRRA also accepts donations to the club. If you are not currently a member and want to support RRRA, you can join at our monthly meeting or on our web site. www.k2rra.org

The elected RRRA officers for 2019 - 2020 are, Bob Shewell, N2HJD, President, Bob ODell, N2BZX, Vice President, ED Wilkonski, KC2WM Secretary, and

Due to our current health crisis please check your organizations web site for the status of meetings and events.

Bob Smith, NS2B-Treasurer / Membership Chairman. RRRA also accepts donations to the club. If you are not currently a member and want to support RRRA, you can join at our monthly meeting or on our web site. www.k2rra.org

ROCHESTER VHF GROUP

We're On-the-Air and On-line!

Use that license (and HF+VHF transceiver) that you worked hard to get! We're on-the-air at 9:00 PM on Mondays (144.260 USB) and Thursdays (50.200 USB). Horizontal antennas work best, but verticals work, too. Join us, On-the-Air! No VHF SSB? No problem. Tune into the net through Echolink node: ka2ene-L #23426.

Warning: VHF SSB operations can result in increased fun and longer DX QSO's.



XRX AMATEUR RADIO CLUB

The XRX Amateur Radio Club meets the 2nd Thursday of each month. The meetings are 6PM at the Webster Recreation Center. Look for details on our website <http://xarc.us>

AMATEUR RADIO ASSOCIATION OF THE SOUTHERN TIER, ARAST

ARAST meets the third Thursday of every month at the Town and Country Fire Department on Gardner Rd in Horseheads New York. Chemung County ARES (CCARES) meets the first Tuesday of the month except February on Harris Hill, next to the National Soaring Museum. See <http://www.ccares.info> for details. CCARES serves the entire area in Chemung, Schuyler and Steuben counties and all are welcome.

Our new website is up and running, although future enhancements are still planned. Check it out at <http://www.arast.info>.

Both CCARES and ARAST monthly meetings will be held online until further notice. Check out the Upcoming Events on arast.info for particulars.

Our 2020 Hamfest, one of the largest in Upstate New York, will be held this year on September 26, 2020 at the Chemung County Fairgrounds in Horseheads, New York. Details and tickets are now available online at http://www.arast.info/arast_website/public/hamfest.php.

Communicators are needed to help with the 2020 Guthrie Wineglass Marathon on October 4, 2020 in the Corning area. If you would like to help, contact the emergency coordinator, Elliott N2OJM, at emergencycoordinator@stny.rr.com

Don't forget to check out our repeaters when you visit the area. N3AQ 147.36(+) and the W2ZJ 146.70(-) are the principal 2-meter repeaters. The latter can also be accessed via Echolink node 672027 with the call sign KA2BED-R. A full list of repeaters that can be heard in the Twin Tiers area surrounding Chemung County can be found at http://www.arast.info/arast_website/public/repeaters.php.

COMMUNITY AMATEUR RADIO CLUB, CARC

If you are interested in being a part of this forward thinking and active club, visit us at a meeting or join us on one of our weekly nets. We meet at the Hoag Library (134 S. Main St. Albion, NY) on the first Saturday of each month at 7PM. Each meeting has a brief training/refresher period with upcoming topics including: net protocol, repeater set-up/maintenance, and digital signaling. The club holds a net every Sunday evening at 8pm (winter) and 9PM (summer) - 0100 UTC Monday - on 147.585 simplex, and we host the Thursday Night Social Net, Thursday at 8:30PM on 147.285+. We'd love to hear you check-in!

DIGITAL COMMUNICATIONS ASSOCIATION OF PERINTON, DCAP

DCAP members continue to experiment with leading edge digital communication modes. We were formed in 1994 to foster the development of local and regional packet radio networks using AX25 and TCP/IP. Today we have members using the club sponsored DSTAR repeater (KB2VZS on 444.8MHz), several personal and publicly accessible DSTAR hotspots, Yaesu System Fusion systems on non-club repeaters and DMR systems through repeaters and personal hotspots. DCAP members meet for breakfast at 7AM nearly every Saturday morning at Rikki's Family Restaurant in the village of Fairport and everyone is welcome to join us. Talk in is on the KB2VZS analog repeater on 146.715MHz with a PL tone of 110.9Hz.

**Due to our current health crisis please
check your organizations web site for the
status of meetings and events.**

DRUMLINS AMATEUR RADIO CLUB

The Drumlins Amateur Radio Club meets every third Wednesday of the month at 7:30 PM at the Wayne County EMO/Sheriff's Office 7376 State Hwy 31 #1000, Lyons, NY 14489. Doors open at 7 pm, meeting starts at 7:30 pm. Announcements will be made on the 146.685 repeater. The Drumlins ARC website address is <http://drumlinsarc.us/>

KEUKA LAKE AMATEUR RADIO ASSOCIATION, KLARA

The purpose of our association is to:

- promote interest in Amateur Radio communication and advancement of the radio art.
- conduct programs, training, and exercises that enhance the skills of the members, and educate the community.
- develop ties with other services and establish relationships with community organizations.
- provide emergency communication services.
- promote enjoyable Amateur Radio related events.

The association was incorporated in 1991 and has been a vibrant part of the community ever since. We have a very active VE testing program. We also participate in numerous public events (the Wineglass Marathon and the Wine Country Classic Boat Regatta are two of the largest).

We operate a system of three repeaters (which are linked), providing a large area footprint for two meter FM amateur use. Please see our website for details. (klara.us)

Our meetings are held on the second Wednesday of each month at the Civil Defense and Fire Training Center on Route 54 in Bath, NY.

ORLEANS COUNTY AMATEUR RADIO CLUB

The Orleans County ARC meets every 2nd Monday of the month at the Orleans County Emergency Operations Center, 14064 West County House Road, Albion, NY 14411. Doors open at 6:00PM, meeting starts at 7:30PM. Anyone with an interest in amateur radio is welcome. Program topics vary from month to month.

The club has an open two meter net every Tuesday night at 9:00PM local time on the club repeater, WA2DQL/R (145.27 -600KHz offset, 141.3 tone). Everyone is welcome to check in.

See the club website <http://ocarc.us> or contact club Secretary Ron Craig, N5BNO for more information.

SQUAW ISLAND AMATEUR RADIO CLUB, SIARC

The Squaw Island Amateur Radio Club (SIARC) meets every second Wednesday of the month at 7:30PM at the Ontario County Safety Training Facility, 2914 County Road 48, Town of Hopewell. We have License Exam Testing every other month which begins at 6:30PM. The meeting for Wednesday, July 8th will most likely be held using zoom and on the air, using the SIARC 146.820 repeater starting at 7:30PM.

SIARC is also holding a Health and Welfare NET Monday through Saturday each week at 2000 hours on the SIARC 146.820 repeater (located in Canandaigua, NY), Tone 110.9. This net is to pass along general information and keep hams in touch. All hams are invited to participate.
73's Steve Benton, WB2VMR, VP SIARC

Due to our current health crisis please check your organizations web site for the status of meetings and events.

THE AMATEUR'S CODE

Originally written by Paul M. Segal, W9EEA (1928)

THE RADIO AMATEUR IS:

CONSIDERATE	Never knowingly operating in such a way as to lessen the pleasure of others.
LOYAL	Offering loyalty, encouragement and support to other amateurs, local club, and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally.
PROGRESSIVE	With knowledge abreast of science, a well built and efficient station and operation beyond reproach.
FRIENDLY	With slow and patient operation when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interests of others. These are the hallmarks of the amateur spirit.
BALANCED	Radio is an avocation, never interfering with duties owed to family, job, school or community.
PATRIOTIC	With station and skill always ready for service to country and community.

Visit our website at <http://www.interlockroc.org/>,
contact us at info@interlockroc.org,
or find us in #interlock on Freenode IRC.

Visit our website at <http://www.interlockroc.org/>,
contact us at info@interlockroc.org,
or find us in #interlock on Freenode IRC.

For more information visit <https://www.makerspacerochester.org/hamradio>

Email n3dsp@lafireline.net for details.

For more information visit <http://www.rochesterastronomy.org/>

**Due to our current health crisis please
check your organizations web site for the
status of meetings and events.**

Raspberry Pi 3B with 7" Touchscreen Monitor

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fshick3@gmail.com
Or
585-721-1653



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editor@rochesterham.org.

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Vice-President: Scott Theis, W2LW	(845) 774-9809	sa_theis@hotmail.com	Secretary: Karl Heinz Kremer, K5KHK	(585) 503-7214	k5khk@khk.net

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Monroe County ARES / RACES

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Squaw Island Amateur Radio Club (SIARC)

Steve Benton, WB2VMR: sbenton2@rochester.rr.com

XRX Amateur Radio Club

Brian Donovan, K2AS: k2as@outlook.com

AUGUST RAG DEADLINE

JULY 15, 2020

**RARA meets at 7PM on the first
Wednesday of each month. Join us at:**

<https://attendee.gotowebinar.com/register/7174580960197717775>

CONTACT WEBMASTER@ROCHESTERHAM.ORG FOR SUPPORT

Rochester Area Repeater Listing

THE RARA RAG

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